

EFFECT OF IMPROVED PROTEIN NUTRITION ON GROWTH,
RUMEN PARAMETERS, BLOOD METABOLITES AND PUBERTY
IN WATER BUFFALO (BUBALUS BUBALIS) HEIFERS

By

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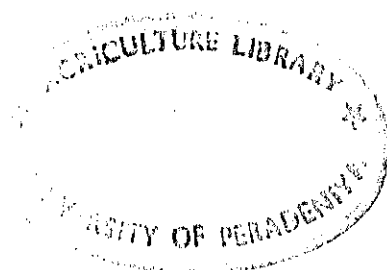
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ABSTRACT

An experiment was conducted to investigate the growth, rumen parameters, blood metabolites, and puberty response of indigenous buffaloe heifers to provision of improved protein nutrition. Twelve indigenous buffaloe heifers were allotted to two groups (n=6/group) balanced by body weight (89.0 ± 8.9 kg) and age (12.0 ± 0.52 months). All the animals were offered "Guinea A" grass (*Panicum maximum*) *ad libitum* during the day. At night, the treatment group was offered 4% urea treated straw, while the control group was offered untreated straw. Daily group feed intake of Guinea grass and straw was recorded. Representative samples of Guinea grass, straw and refusals were collected periodically, for proximate analysis. Individual body weights were recorded monthly. Rumen fluid samples were obtained every 4th week to determine rumen pH and rumen Ammonia-N ($\text{NH}_3\text{-N}$). Blood samples were obtained on the same days to determine blood urea nitrogen (BUN), β -hydroxybutyrate [D(-)-3-hydroxybutyrate] (BHB), serum albumin (Al), and total protein (TP). Circulating progesterone (P_4) levels were determined in blood samples obtained on every 5th day. Rectal palpation of ovarian structures was performed weekly. The study was conducted over a period of 40 weeks.

Urea treated straw had higher ($P < 0.05$) crude protein (CP) content than untreated straw. Animals given the urea treated straw had greater straw dry matter intake ($P < 0.01$), total dry matter intake ($P < 0.01$), nitrogen intake ($P < 0.01$) and energy intake ($P < 0.01$) compared to control. Rumen ammonia content was higher ($P < 0.05$) in animals given the urea treated straw. Rumen pH, BHB, BUN, Al, and TP were not different between the groups. But trends in rumen pH and BUN in two groups suggested better utilization of available dietary protein by the animals given the urea treated straw. The animals given the urea treated straw had superior ($P < 0.05$) total

II

body weight gain compared to the control group animals during the 40 weeks experimental period. Elevated serum progesterone and functional ovaries were detected in 2 heifers in the treatment group when compared to none in the control.

The results suggest that supplementary feeding of urea treated straw instead of untreated straw improved protein nutrition, growth performance, nitrogen utilization and accelerated ovarian function in the indigenous buffalo heifers.